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BEHAVIOR REACTIONS CHARACTERISTIC OF THE INDIVIDUALS WITH EGOISTIC AND ALTRUISTIC TYPE OF SOCIAL BEHAVIOR

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Abstract

Different types of social behavior are characterized by different behavioral reactions. Characteristics of selfish and altruistic social behavior are not clearly confirmed by the data of psychophysiological studies. Therefore, the purpose of the work is to identify the peculiarities of behavioral reactions of individuals with more expressed egoistic and altruistic social behavior, which are based on data of electroencephalographic research. 120 (aged 21±4 years) individuals took part in the study. As a result of complex psychological testing (based on Leary's test) all subjects were divided into two groups - altruistic and egoistic. Registration of electrical activity was carried out in a model of collective interaction using the Stag Hunt Game and a specially developed model of social behavior Mini-Basketball. The number of elections for egoistic and altruistic stimulus and the reaction time to them were observed in the study. The stimulus "Rabbit" and "Throw" were considered as egoistic; "Stag" and "Pass" - as altruistic in accordance with the test methods. As a result, the frequency of choosing the type of stimuli corresponds to the social orientation of the individuals. The reaction time increases with the choice of the type of stimulus, which does not coincide with the type of social orientation of the subject.

Keywords: time reaction, egoistic stimuli, altruistic stimuli.

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1. Introduction

Social behavior is a complex of actions and reactions of social subjects in the process of realizing their activity essence, their immanent activity in interaction with other subjects with the social environment, with society as a whole, the essential characteristic of which is rationality in setting goals and in defining methods action [1]. Social behavior is a unity of motivational, operational and effective aspects, where meaningful and unconscious components are considered in different combinations [2].

Different types of social behavior are characterized by different behavioral reactions. The evolutionary development of altruism and egoizm is accompanied by well-defined social norms and characteristics [3]. It is known that the reaction of individuals with more expressed egoistic social behavior to egoistic and altruistic stimuli may be different [4]. The literature does not fully explain the behavioral features of individuals with different sociotype [5]. In addition, the characteristic of selfish and altruistic social behavior is not clearly confirmed by the data of psychophysiological studies.

2. Aim of research

Reveal the peculiarities of behavioral reactions of individuals with egoistic and altruistic social behavior based on psychophysiological research data.

3. Materials and Methods

The research was conducted on the basis of the Lesya Ukrainka Eastern European National University in 2013–2015. The study was attended by 120 people of different sexes aged 21±4 years.

All participants in the experiment were divided into two groups – selfishly authoritarian (46 people) and friendly altruistic (44 people) at the first stage of the study, after processing the complex psychological testing. It was difficult to identify the type of social behavior in 20 individuals, so they were not taken into account in a further study.

Psychological testing was performed to assess the psychological characteristics of the subjects related to their psychosocial type, as well as general psychophysiological characteristics that may affect the results of the study. This test was conducted to divide the subjects under study into groups according to their psychosocial characteristics. The following tests were used:

1 – egocentric associative test (EAT);

2 – questionnaire on the structure of the temperament of Rusalov;

3 – methodology for the diagnosis of interpersonal relations by T. Leary [6].

Registration of electric activity was carried out by modeling of collective interaction. Due to the technical capabilities and specific requirements for conducting psychophysiological research, there was a need to create an original stimulus material, for which a special model of social behavior was developed (the game "Mini-basketball"). The game was presented as a set of pictures, collected in 20 series (4–5 pictures in each series). According to the method, the stimulus "Throw" was considered as egoistic, and the stimulus "Pass" – as altruistic.

In order to be able to compare the results of using the original method with the available data on the peculiarities of electrophysiological reactions in the literature under the conditions of collective interaction, another test situation was used - the Stag Hunt Game [7]. According to this technique, the stimulus "Stag" was considered as altruistic, because it is difficult to hunt stag without support of the team. The stimulus "Rabbit" is selfish, because it is possible to hunt a rabbit independently.

The number of selections of the stimulus was processed using the Microsoft Excel 2007 statistical software, the difference was considered to be reliable if the t-student test was ≤ 0.05. The reaction time (in sec) was determined by linear measurement on the electroencephalogram, which was recorded using the hardware and software complex "NeuroKom", developed by the scientific and technical center of electronic medical devices and technologies "KhAI-Medica" of the National Aerospace University. Then the data was processed using the MatLab program.

3. Results

The number of stimulus choices for "Rabbit" or "Stag" ("Stag Hunt Game") was determined for each study individually at the beginning of the study, and then for the study group as a whole. The results of the number of elections in this test method are shown in **Fig. 1**.

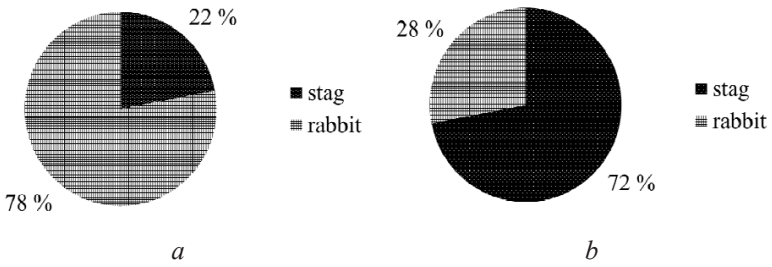

Fig. 1. The number of choices for various stimuli during the Stag Hunt Game:
a – Egoistic social type; *b* – Altruistic social type

Thus, the subjects who belong to the egoistic group chose stimulus "Rabbit" on average 48±0.8 times (78 %), while the stimulus "Stag" – 27±0.5 times (22 %). Experiment participants with more expressed altruistic behavior showed opposite results. They chose stimulus "Rabbit" 25±1,3 times (28 %), and stimulus "Deer" – 46±0,7 times (72 %). The difference between the

study groups in the number of elections was statistically significant in accordance with the t-student test.

The Mini-basketball social behavior model, which was created and adapted to determine the psychosocial characteristics of people with different social inclinations, also allowed to analyze the number of elections for the "Pass" and "Throw" stimulus and the reaction time. It should be noted that the "Pass" stimulus was considered to be an altruistic stimulus; it meant the player's orientation in support of the team, while the "Throw" stimulus was considered an egoistic stimulus and envisaged a personal gain and an increase in its own account.

Thus, it was determined by statistical calculation how many times each stimulus was selected by the two groups under study (**Fig. 2**).

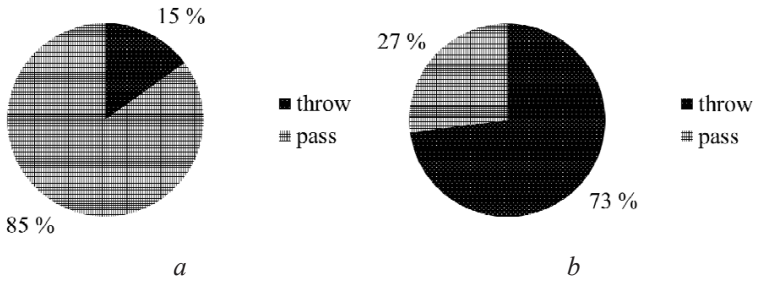

Fig. 2. The number of choices for various stimuli during the Mini-Basketball game:
a – Altruistic social type; *b* – Egoistic social type

The individuals who belong to the egoistic group chose the "Throw" stimulus on average 35±0.6 times (73 %), and the "Pass" stimulus 15±1.1 times (27 %). Participants in the experiment with more expressed altruistic behavior, on the contrary, chose the "Pass" stimulus more often than the "Throw" stimulus. So, the stimulus "Pass" they chose 12±0.3 times (15 %), and the stimulus "Throw" – 38±0.8 times (85 %). The difference between the study groups in the number of elections was statistically significant in accordance with the t-student test.

The results of the average data of the reaction time are shown in **Fig. 3**.

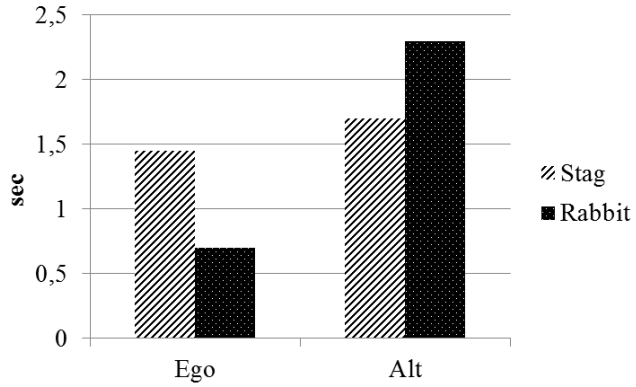

Fig. 3. Reaction time to various stimuli during the Stag Hunt Game

The individuals who belong to egoistic group (Ego) spend 0.7 seconds to choose the image of the Rabbit and 1.45 seconds to choose the image of the Stag. At the same time, the individuals who belong to the altruistic group (Alt) responded to the same images in a different way. So, individuals from this group spent 1.7 seconds on the "Stag" image and 2.3 seconds on the "Rabbit" image.

It is worth saying that individuals with more expressed altruistic type of social behavior generally spent more time choosing both images than individuals with more expressed egoistic social orientation.

According to **Fig. 4**, a group of people with more expressed egoistic social type (Ego) spent to the stimulus "Throw" 2.8 sec, while to the stimulus "Pass" – 4.7 sec. Individuals with more expressed altruistic type of social behavior (Alt) spent to the choice of the stimulus "Throw" – 4.2 sec, while to the stimulus "Pass" – 3.2 seconds.

Mini-Basketball Game included an analysis of each gaming situation, so the time, spent on a particular stimulus, was larger than in the previous test.

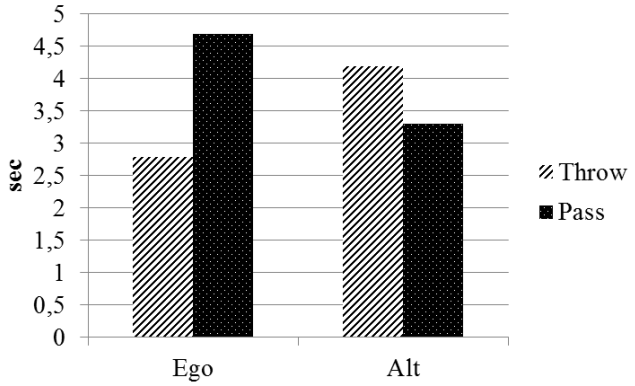

Fig. 4. Reaction time to various stimuli during the Mini-Basketball Game

4. Discussion

As it is known from previous studies, egoistic-oriented individuals often choose egoistic stimulus, and altruistic-oriented individuals – altruistic stimulus [8, 9]. According to the results of our study, this hypothesis was confirmed during the implementation of both experimental situations. In addition, most research suggests a longer involvement of attention mechanisms in altruistic-oriented individuals, rather than in people with egoistic sociotype [10].There are reasons to tell about a longer involvement of the attention mechanisms in the altruistic group due to the longer overall response time to all stimuli.

The study has shown that individuals with more expressive egoistic behavior spent more time choosing an altruistic stimulus, whereas individuals with more expressive altruistic social behavior spent more time choosing an egoistic stimulus. This may be explained by the different nature of the subjective response to the opposite stimulus.

5. Conclusions

1. The frequency of choosing the type of stimuli corresponds to the social orientation of the studied individuals.

2. The reaction time increases during choosing the type of stimulus that does not coincide with the type of social orientation of the subject, which indicates the different nature of the subjective response to the opposite stimulus.

3. The results indicate a greater involvement of the mechanisms of attention in people with a more expressive altruistic type of social behavior.

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